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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/054,550 | 01/18/2002 | Rodney M. Goodman | 018564-000631 | 8307 |

20350 7590 03/13/2003

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EXAMINER

SINES, BRIAN J

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 03/13/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-----------------|--------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/054,550 | GOODMAN, RODNEY M. |
| | Examiner | Art Unit |
| | Brian J. Sines | 1743 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 9/16/2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 1-18 and 25-39 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 19-24 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) 1-39 are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) Interview Summary (PTO-413) Paper No(s). _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1 – 13, drawn to a method of analyte identification, classified in class 706, subclass 38.
- II. Claims 14 – 28, drawn to an analyte detection system comprising a sensor on an integrated circuit, classified in class 422, subclass 82.01.
- III. Claims 29 – 34, drawn to a method of analyte identification, classified in class 702, subclass 27.
- IV. Claims 35 – 39, drawn to a method of making an analyte detection sensor, classified in class 438, subclass 17.

With respect to group II, claims 22 – 24 are generic to a plurality of disclosed patentably distinct species. Should the applicant elect group II, then the applicant must elect one of following species within group II, the claims comprising:

Species I, claims 14 – 18, drawn to a circuit for an analyte detection system, which comprises transistors.

Species II, claims 19 – 21, drawn to a circuit for an analyte detection system, which comprises autozeroing amplifiers.

Species III, claims 25 – 28, drawn to a circuit for an analyte detection system, which comprises multiplexers.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the analyte detection system does not require the use of analog weights in order to identify an analyte.

Inventions I and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the different inventions have different modes of operation. For example, the method of analyte identification as recited in group III does not require the use of analog weights in order to identify an analyte.

Inventions I and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In

the instant case, the different inventions have different functions. For example, the method as recited in group IV involves the forming of an analyte detection sensor on a substrate, whereas the method as recited in group I involves a method of analyte identification using a sensor. Furthermore, the sensor as recited in group IV apparently does not require the use of analog weights in order to identify an analyte.

Inventions II and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the method of analyte detection does not require the use of a circuit for analyte detection system comprising either transistors, autozeroing amplifiers, or multiplexers in order to identify an analyte as belonging to a class of analytes.

Inventions IV and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the circuit for an analyte detection system may be made by another materially different process, such as a process of manufacture involving steps incorporating either transistors, autozeroing amplifiers, or multiplexers within the sensor system.

Inventions III and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the different inventions have different functions. For example, the method as recited in group IV involves the forming of an analyte detection sensor on a substrate, whereas the method as recited in group III involves a method of analyte identification using a sensor.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Steve Cahill on 2/6/2003 a provisional election was made with traverse to prosecute the invention of group II, generic claims 22 – 24 and species II claims 19 – 21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1 – 18 and 25 – 39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22 – 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Lewis et al. (U.S. Pat. No. 5,571,401 A). Regarding claims 22 and 23, Lewis et al. teach a detection system having a sensor array comprising a plurality of sensor sites, wherein the sensor array comprises: a first sensor site comprising a first material having regions of a nonconductive organic polymer material, such as main-chain carbon polymers including poly(dienes), and a conductive material, such as polypyrrole, and a second sensor site comprising a second material having regions of a nonconductive organic polymer material and a conductive material, wherein an electrical property in each of the sensor sites changes in the presence of an analyte. Lewis et al. teach that these sensor arrays comprise a plurality of compositionally different chemical sensor sites. Lewis et al. teach the incorporation of three or more sensor sites within the sensor array (see col. 2, lines 57 – 65; col. 3, lines 40 – 67; col. 4, lines 1 – 65; col. 7, lines 3 – 23; col. 11, lines 15 – 34; figure 4A). Regarding claim 24, Lewis et al. teach that the system identifies an analyte in response to changes in the electrical properties, such as an electrical resistance, in each of the sensor sites (see col. 7, lines 23 – 58).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 19 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (U.S. Pat. No. 5,571,401 A) in view of Minch et al. (U.S. Pat. No. 5,986,927 A). Regarding claims 19 – 21, Lewis et al. teach a detection system having a sensor array comprising a plurality of sensor sites, wherein the sensor array comprises: a first sensor site comprising a first material having regions of a nonconductive organic polymer material, such as main-chain carbon polymers including poly(dienes), and a conductive material, such as polypyrrole, and a second sensor site comprising a second material having regions of a nonconductive organic polymer material and a conductive material, wherein an electrical property in each of the sensor sites changes in the presence of an analyte. Lewis et al. teach that these sensor arrays comprise a plurality of compositionally different chemical sensor sites. Lewis et al. teach the incorporation of three or more sensor sites within the sensor array (see col. 2, lines 57 – 65; col. 3, lines 40 – 67; col. 4, lines 1 – 65; col. 7, lines 3 – 23; col. 11, lines 15 – 34; figure 4A). Lewis et al. teach that each of the sensor sites provides an output signal that indicates changes to an electrical property, such as an electrical resistance, in the presence of an analyte (see col. 7, lines 23 – 58). Lewis et al. do teach that the

sensors or chemiresistors can be integrated into the front end of a simple amplifier interfaced to an A/D converter to efficiently feed the data stream directly into a neural network software or analysis section (see col. 6, lines 47 – 56). Lewis et al. are silent to the specific teaching of the incorporation of autozeroing amplifiers, which are coupled to receive the output signals of each of the sensor sites, wherein the autozeroing amplifiers adapt out low frequency components of the sensor output signals. Minch et al. do teach an autozeroing floating-gate amplifier, which is an integrated continuous-time filter that is intrinsically autozeroing (see col. 5, lines 45 – 66). Minch et al. teach the use of the autozeroing floating-gate amplifier with a variety of types of sensors (see col. 24, lines 25 – 55). Minch et al. teach that the long-term drift in the baseline resistance of the sensor is adapted out by the circuits autozeroing behavior (see col. 24, lines 55 – 64). Minch et al. teach that these autozeroing floating-gate amplifier devices are particularly well suited to smell-sensing and chemical sensing devices since many of these sensing devices are based upon variable sensor resistance and experience drift over time (see col. 24, lines 64 – 67). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the autozeroing floating-gate amplifier, as taught by Minch et al., with the detection system, as taught by Lewis et al., in order to provide a detection system with stable performance by eliminating or mitigating the occurrence of sensor signal drift. Regarding claim 20, through the incorporation of the autozeroing floating-gate amplifier with the detection system, as taught by Lewis et al. in view of Minch et al., it would have been obvious to one of ordinary skill in the art that the floating-gate would store an analog value representative of the changes in the

electrical property from the sensor sites, as such is the conventional operation of such a device. Regarding claim 21, through the incorporation of the autozeroing floating-gate amplifier with the detection system using neural network software for data analysis, as taught by Lewis et al. in view of Minch et al., it would have been obvious to one of ordinary skill in the art that that the analyte detection system would use the analog values stored in the floating-gate device to determine the presence of an analyte, as such is the conventional operation of such a system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shima teaches an analog storage device, which comprises a floating gate, for an artificial neural network system. Gelperin teaches an olfactory sensor identification system and method. De Wit et al. teach chemically sensitive sensors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines whose telephone number is (703) 305-0401. The examiner can normally be reached on Monday - Friday (11:30 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

BJS
March 4, 2003


Jill Warden
Supervisory Patent Examiner
Technology Center 1700